

Building AI Agents

NORTHWESTERN | KELLOGG

A hands-on, AI-first session on building and managing AI agents.

Sébastien Martin

Associate Professor of Operations · Northwestern Kellogg
CDAIO · Build – AI Agents · June 30, 2026

BEFORE WE START

When you have a moment, please open your laptop and go to:

sebastienmartin.info/p/cdaio

and follow the “**Setup before we start**” steps if you haven’t already. Thank you!

Sébastien Martin

Background

- From Paris, France
- PhD from MIT
- Associate Professor of Operations

Research

- Lyft's dispatch algorithm
- Waymo Fleet Control
- Boston & SF school-bus routing

Teaching at Kellogg

- AI Foundations for Managers (AgentOps)
- Operations Management



Outside of Kellogg



NYSE: ESAB

A global leader in **welding & cutting equipment**, operating worldwide.

~\$2.8B

Annual sales · 2025

120+ yrs

In business

On its Board of Directors

- **Director since 2026**, on the Audit Committee (governance and oversight).
- I also advise the company directly on its **AI strategy**.

Our afternoon

1 Hands-on agentic workflow design

we build a real AI agent together in **n8n**, no experience needed

2 Leveraging AI agents

we practice the decisions behind implementing AI workflows: when is AI the right tool, and where do **people** stay in charge?

3 AI for personal use

if we have time, 20 minutes on how you can use AI for **yourself**. Huge things are happening right now.

Building AI workflows with n8n

The best way to understand the technology is to use it.

What is n8n?



An automation platform. You connect blocks into workflows that run on their own, with little or no code.

And one of the most widely used platforms for deploying AI agents in practice.

Skyline Experiences

Premium outdoor experiences,
worldwide

- Harbour sails and vineyard tours
- Hot-air balloons and food tours

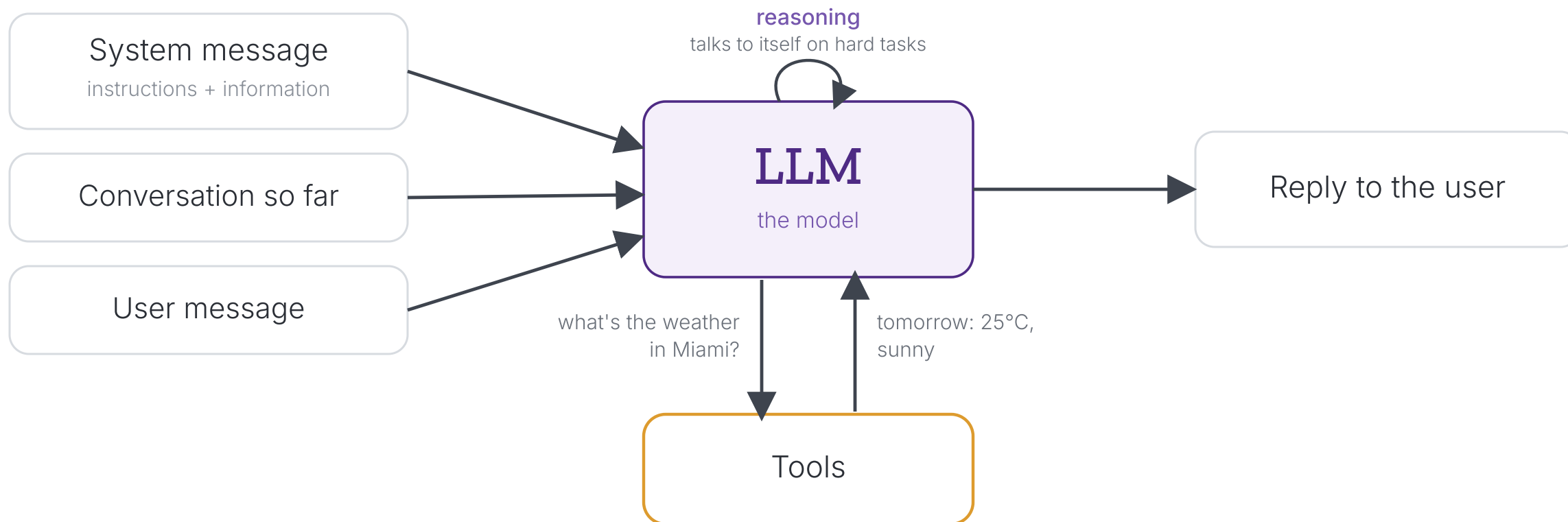
Their customers are always travelling,
and the weather always matters.

OUR GOAL

A customer-service AI agent for
customers who have already booked an
experience.



What is an AI agent?



The ONLY three things you control



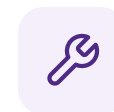
The model

The LLM, the large language model: the brain. Bigger and smarter, or cheaper and faster. Hosted by a provider, or run on your own machines. Many trade-offs.



The instructions

The system message. Information it was never trained on, and the rules you want it to follow.



The tools

What it can reach and act on. Like you, but with your phone in your hand.

Hands-on 1 · Make it yours

Edit the system message of the chat agent we just built, send a message, see what changes. Try a few, they get harder.

- Change the way it **speaks**: warm, playful, five-star formal, or another language.
- Have it **upsell** another experience when it fits.
- Make it **always add a 3-day forecast** for any city asked.
- Give it **facts about Skyline** it can share.
- Tell it **when to use the weather tool**, not every time.
- Swap the model: `gpt-5.5-mini` → `gpt-5.5`. Feel the difference.

Hands-on 2 · Give it an inbox

You can just follow along with me, step by step. Lost the thread? Pick up here:

- Create your workflow.** In n8n, open the **CDAIO Build Your Agent** project, then add one named after yourself: `firstname-lastname-agent2` (e.g. `johnsmith-agent2`).
- Add the template.** On this page, copy the code under "2 · Email agent" and paste it onto your workflow canvas.
- Set your email.** Open the Gmail Trigger node and replace `YOUR_EMAIL_HERE@EMAIL.COM` with your own address.
- Email the agent.** From that same address, write to `aiml901sebastienmartin@gmail.com`, then wait a minute.
- Run it by hand.** Click each box in order, waiting for the green check before the next.
- Go live (optional).** Click Publish and the agent runs on its own, checking for mail once a minute.



Congratulations, you've created an agentic workflow!

Hands-on 3 · The full workflow

SET IT UP

- Same process as the last slide, with a new workflow named after yourself: `firstname-lastname-agent3` (e.g. `johnsmith-agent3`).
- This time copy **"3 · Human in the loop"** from the page and paste it onto the canvas.
- Set your email in the **Gmail Trigger**, as before.
- Email the agent, then run each box by hand, or click **Publish** so it runs automatically on each new email.

Your inbox plays **both parts**: the customer who writes in, and the reviewer who approves the tricky ones.

EXPERIMENT WITH THE AI INSTRUCTIONS

- Run the whole thing. Try to get one reply the AI sends directly, and one that goes to a human.
- Make the router **more cautious**, so more emails go to a human.
- Have the AI always add the customer's **local weather forecast** to its note for the reviewer.

So why did we do this?

THE REAL TAKEAWAY



You don't have to build agents yourself

When a technology moves this fast, what matters is understanding what it can and can't do, enough to put it to work.

The hard questions are **business questions, not AI questions**. So the real move is to **empower your people**, more than to hire an outside "AI expert."

BUT IF YOU'RE CURIOUS



And building one is within reach

In my Kellogg class AIML 901, non-technical students build their own AI agents in five weeks, many now run them at work or started companies.



See what they built:

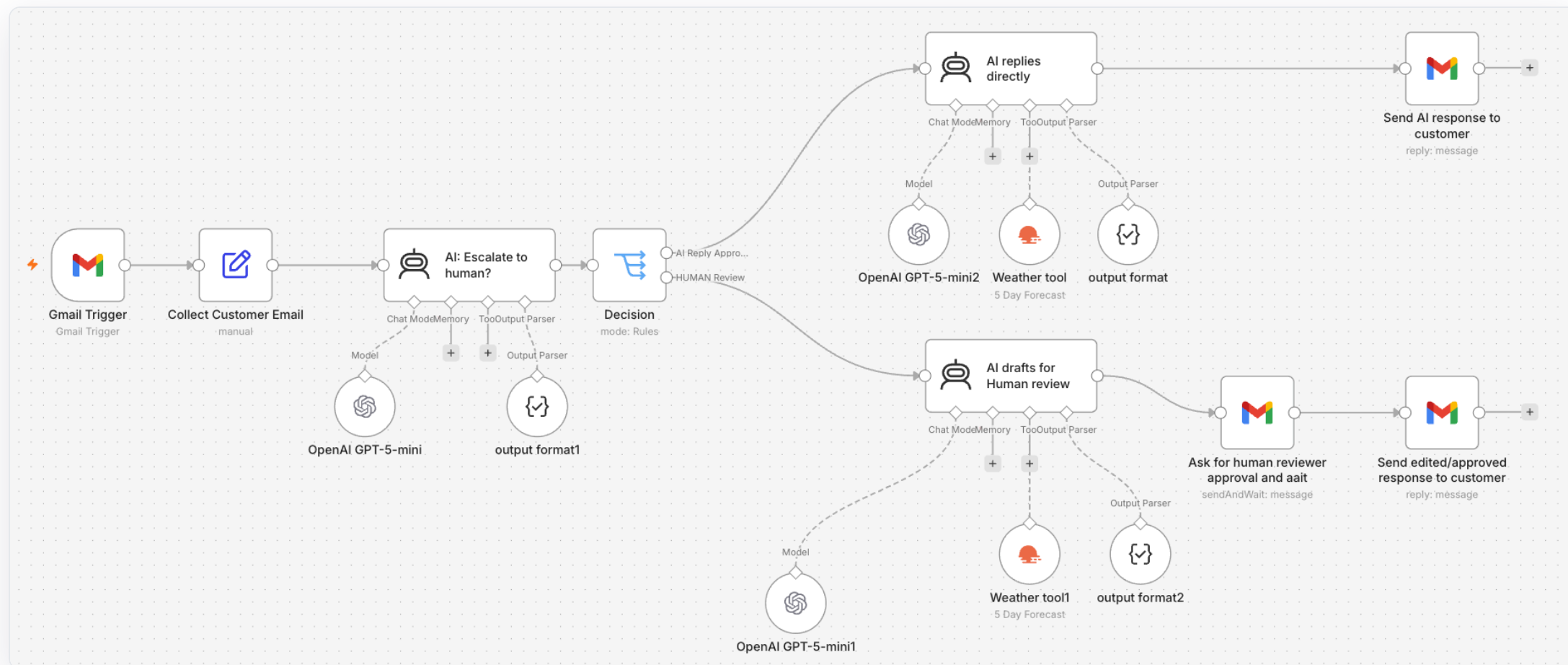
sebastienmartin.info/aiml901/showcase

Leveraging AI agents

Now we practice the decisions behind putting AI to work: when is it the right tool, and where do people stay in charge?

You just built this

A router reads each email, then routes it to an AI branch or a human branch.



Two ways to put AI to work



An AI project

Using an AI assistant (ChatGPT, Claude, Claude Code) to help you work, or to work for you.

One-off, and AI is here to **augment your productivity and your capabilities.**



An AI-powered process / workflow

Built to be repeated, and to play a big role in the company.

Like any workflow in manufacturing or software.

And here is the surprise: most of the work is already yours.

95% your domain knowledge: operations, your business, how work gets organized



5%

AI: one new ingredient you fold into how you already organize work.

AI or human?

a (*flawed*) framework

COST OF A MISTAKE ↑

Automate, with checks
Rules do the work, you verify the output.

Human in the loop
AI drafts, a person decides.
the human as guardrail, not a bottleneck

Just automate it
Plain rules, no AI needed.

Let the AI handle it
Let the agent run on its own.

AMBIGUITY OF THE TASK →

An interactive case



An AI-powered interactive case.

Noyes noyesai.com

THE PAIN POINT

After every client visit, Proxima's sales representatives lose 1 to 3 hours on paperwork: writing up notes, updating the CRM (the customer database), and drafting follow-up emails.

WHO IS ON IT

Maya Chen leads the company's push to put AI agents to work (the AfterVisit AI pilot). She is sure it is a winner. Her ideas may or may not be good.

YOUR ROLE

You are the advisor Maya brought in. Talk to her and gather as much as you can, she knows a lot. Work out what you would do in her shoes, and how you would use AI.

Talk to Maya

It is an interactive case: you can actually talk to the people in it.

- 1 Open the class page, then the “Talk to Maya” section.
sebastienmartin.info/p/cdaio
- 2 Interview her. Ask as many questions as you can.

YOUR GOAL · FIGURE OUT

- › The situation, deeply: what does Maya want to do?
- › Would you do anything differently?
- › How exactly would you use AI, and which agent is worth building?
- › Where is the line between agents and people?

~15 min then we debrief together.

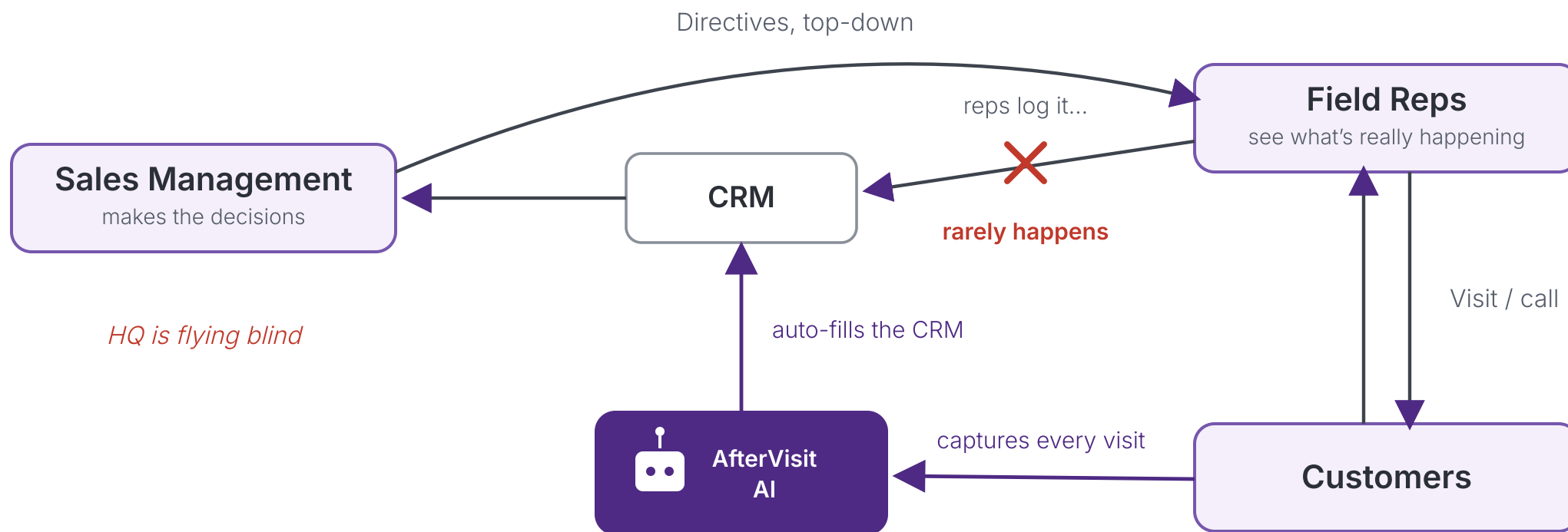


Maya Chen

Lead, AfterVisit AI
Proxima Health Systems

What's really going on at Proxima

A communication problem between the field and headquarters, and AI is the proposed fix.



You only met Maya

If you asked, Maya may have shared other people's points of view across the company.



Maya Chen
Program Lead, AfterVisit AI
The one you talked to



Dana Morales
Senior Sales Rep
"Don't surveil me"
"I want to stay in control"



Marcus Green
Head of Sales
"Can it connect me and my reps?"
"Will I finally see the field?"



Gavin Holt
Chief Financial Officer
"Prove the ROI"
"What if it fails?"



Morgan Ainsworth
Chief Executive Officer
"Give me a board story"
"Just don't embarrass us"



Jordan Reeves
Head of IT
"Is our data safe?"
"People use AI in secret"

One agent, all of this at once

When should a human step in?

Will reps feel watched?

Where's the ROI?

Who stays in control?

Shadow AI is already here

A story for the board

Fear of being replaced

What should the agent do?

Data security & privacy

What to measure in 90 days?

Fix the system, not the people

Include users in design

Replace the costly CRM?

Could our data leak?

Move fast, or build trust?

Give HQ real visibility

Risk of a field revolt

Kill switch & stage gates

Where does our data live?

Consent to record?

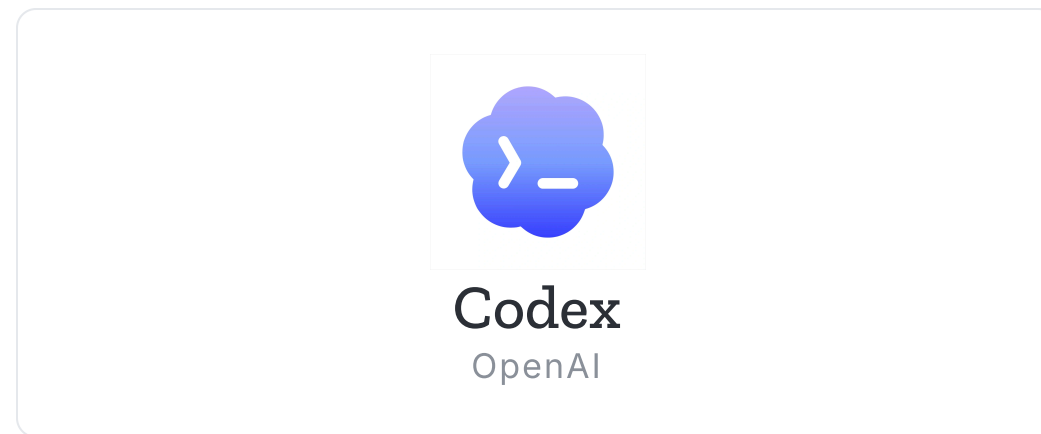
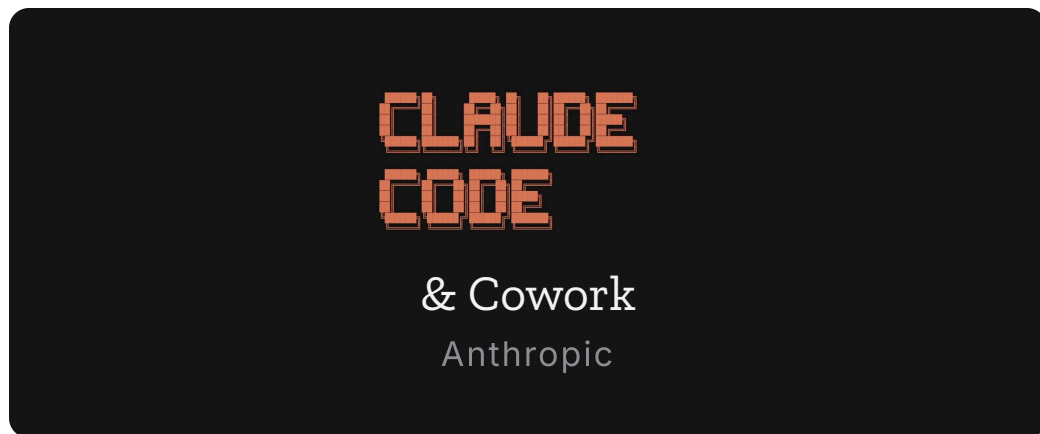
Building with AI

AI can do much more for you than run workflows, almost like your own "remote employee."

What happens if AI keeps getting more powerful?



Computer agents



Whichever you pick, this is the one to get into: an AI agent that works right on your own computer, the closest thing yet to a general-purpose teammate.

Live demo

Let me show you what one of these can actually do.

Why start using computer agents now?



It builds on what you know

There are no AI experts, and you can reach the frontier fast.

AI magnifies the expertise you already have: call it 95% you, 5% AI.



It puts you in control

Use it yourself and you keep your judgment, instead of outsourcing your thinking.

The value sits with the leaders who understand it firsthand, not a hired specialist.

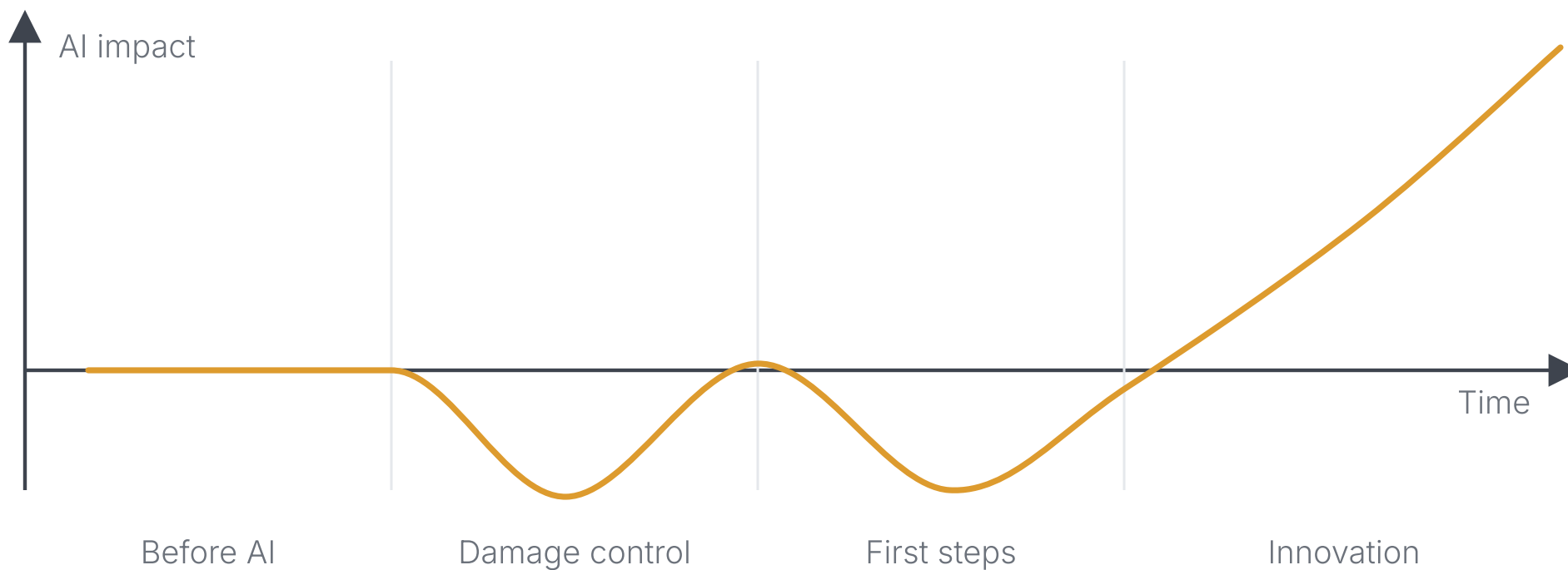


The timing is right

I'm seeing fast adoption at the C-level.

What mattered six months ago barely matters now, so no one is behind.

My own path with AI



What happened when I tried to use AI to change the way I teach.

Thank you!

There are no AI experts. Which is just another way of saying that **everyone can become one.**

So here's my one piece of advice: **build, build, build.**



sebastienmartin.info



[linkedin.com/in/sebmart](https://www.linkedin.com/in/sebmart)



sebastien.martin@kellogg.northwestern.edu

I'll keep the slides and course materials online for a couple of months, in case you'd like to revisit anything.